

73049-40

07/18/2013

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

JUL 18 2013

Ms. Doina Bujor
Regulatory Manager
Valent BioSciences Corporation
870 Technology Way
Libertyville, IL 60048-6316

Re: Valent BioSciences Corporation; XenTari® Biological Insecticide Dry Flowable
EPA Registration No. 73049-40
Minor Label and Formulation ("Fast Track") Amendment
Submissions Dated 06/27/2012, 04/03/2013, 04/06/2013, 04/09/2013, 04/23/2013, and
07/02/2013
Decision No. 467508

Dear Ms. Bujor:

The U.S. Environmental Protection Agency (EPA) reviewed your request to amend the subject product registration, which included the following changes to the product label:

- 1) Correction of minor formatting inconsistencies and typographical errors (both master label and sublabel 1).
- 2) Insertion of "Manufactured for:" in front of Valent BioSciences Corporation's name and address in accordance with 40 C.F.R. § 156.10(c) (both master label and sublabel 1).
- 3) Insertion of "Net Weight" (both master label and sublabel 1).
- 4) Modification of the Hot Line Number in the First Aid box (both master label and sublabel 1).
- 5) Modification of certain text in the Hazards to Humans and Domestic Animals section (changes emphasized) (both master label and sublabel 1):

"Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet."

CONCURRENCES

SYMBOL	7511P	7511P	7511P				
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DATE	07/18/2013	7/18/13	7/18/13				

- 6) Establishment of a separate Engineering Controls section with the following new text (both master label and sublabel 1):

IMPORTANT: When reduced PPE is worn because a closed system is being used, handlers must be provided all PPE specified above for "applicators and other handlers" and have such PPE immediately available for use in an emergency, such as a spill or equipment breakdown."

- 7) Removal of the following statement from the User Safety Recommendations box because it is already present in the Hazards to Humans and Domestic Animals section (both master label and sublabel 1):

"Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet."

- 8) Modification of certain text in the Environmental Hazards section (changes emphasized) (both master label and sublabel 1):

"This product is toxic to aquatic invertebrates. For terrestrial uses: Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters or rinsate."

"This product must not be applied aerially within 1/4 mile of any habitats of threatened or endangered lepidoptera."

- 9) Modification of the following statement in the Directions for Use (changes emphasized) (both master label and sublabel 1):

"For any requirements specific to your State or Tribe, consult the State or Tribal agency responsible for pesticide regulation."

- 10) Adjustment of text in the Storage and Disposal box to align with information presented in Chapter 13 of the Label Review Manual and to account for the intended packaging of the product (i.e., plastic bags) (both master label and sublabel 1).

- 11) Modification of several statements in the Directions for Use for clarification purposes (e.g., tank-mixing instructions and water use specifications for ground applications) (both master label and sublabel 1).

- 12) Revision of or addition to (e.g., grass forage, fodder, and hay crop group) the crop group and commodity listings in accordance with 40 C.F.R. § 180.41 (both master label and sublabel 1).

- 13) Removal of all postharvest uses (e.g., applications to soybean and tobacco) (both master label and sublabel 1).

Doina Bujor
EPA Registration No. 73049-40

- 14) Addition of "To the extent consistent with applicable law" to the first sentence in the Notice to Buyer section to align with information presented in Section IX of Chapter 12 of the Label Review Manual (both master label and sublabel 1).

Additionally, at EPA's request (re: ensuring compliance with National Organic Program standards), you updated the confidential statements of formula (CSFs) on file for XenTari[®] Biological Insecticide Dry Flowable. There is now only one valid CSF for this product registration: a basic formulation dated May 6, 2013. All previously accepted XenTari[®] Biological Insecticide Dry Flowable CSFs (including basic and alternate formulations) have been superseded by the aforementioned CSF.

All the changes referred to above, submitted in connection with registration under section 3(c)(5) of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), are acceptable provided that you submit two (2) copies of your final printed labeling before you release the product for shipment. Refer to the A-79 enclosure for further description of final printed labeling.

Your release for shipment of the product bearing the amended labeling constitutes acceptance of these conditions. If you have any questions regarding this letter, please contact Ms. Jeannine Kausch by telephone (703-347-8920) or email (kausch.jeannine@epa.gov).

A stamped copy of the label is enclosed for your records.

Sincerely,



Kimberly Nesci, Chief
Microbial Pesticides Branch
Biopesticides and Pollution
Prevention Division (7511P)

Enclosures (2):

- XenTari[®] Biological Insecticide Dry Flowable Stamped, Accepted Label
- A-79 Enclosure

4/41

MASTER LABEL

**XENTARI®
BIOLOGICAL INSECTICIDE
DRY FLOWABLE**

 **For Organic Production**

Active Ingredient:

<i>Bacillus thuringiensis</i> subsp. <i>aizawai</i> strain ABTS-1857 fermentation solids, spores, and insecticidal toxins.....	54.0%*
Other Ingredients.....	46.0%
Total.....	100.0%

*Potency: 35,000 Diamondback Moth Units per mg of product or 15.9 billion Diamondback Moth Units per pound of product.

The percent active ingredient does not indicate product performance and potency measurements are not federally standardized.

**KEEP OUT OF REACH OF CHILDREN
CAUTION**

Manufactured for:
Valent BioSciences Corporation
870 Technology Way, Suite 100
Libertyville, IL 60048

Batch Code: _____

Net Weight: _____

EPA Registration No. 73049-40
EPA Est. No. 33762-IA-1

ACCEPTED

JUL 18 2013

**Under the Federal Insecticide, Fungicide,
and Rodenticide Act, as amended, for
the pesticide registered under
EPA Reg. No. 73049-40**

FIRST AID	
If in eyes	<ul style="list-style-type: none"> • Hold eye open, and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
If on skin or clothing	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.
If inhaled	<ul style="list-style-type: none"> • Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth if possible. • Call a poison control center or doctor for further treatment advice.
HOT LINE NUMBER	
<p>Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-877-315-9819 (24 hours) for emergency medical treatment and/or transportation emergency information. For all other information, call 1-800-323-9597.</p>	

**PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS (AND DOMESTIC ANIMALS)
CAUTION**

Causes moderate eye irritation. Harmful if absorbed through the skin or inhaled. Avoid contact with skin, eyes or clothing. Avoid breathing dust or spray mist. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove and wash contaminated clothing before reuse.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Waterproof gloves
- Shoes plus socks

Mixers/loaders and applicators must wear a dust/mist filtering respirator meeting NIOSH standards of at least N-95, R-95 or P-95. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.

Follow the manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

ENGINEERING CONTROLS

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

IMPORTANT: When reduced PPE is worn because a closed system is being used, handlers must be provided all PPE specified above for "applicators and other handlers" and have such PPE immediately available for use in an emergency, such as a spill or equipment breakdown.

USER SAFETY RECOMMENDATIONS

Users should:

Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

Remove clothing/PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

This product is toxic to aquatic invertebrates. For terrestrial uses: Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters or rinsate.

This product is toxic to the green lacewing and the predatory mite (*Metaseiulus occidentalis*).

This product must not be applied aerially within 1/4 mile of any habitats of threatened or endangered lepidoptera. No manual application can be made within 300 feet of any threatened or endangered lepidoptera.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. For any requirements specific to your State or Tribe, consult the State or Tribal agency responsible for pesticide regulation.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application.

Do not enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 4 hours.

PPE required for early entry to treated areas (that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water) is: coveralls, waterproof gloves and shoes plus socks.

NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

Keep unprotected persons out of treated areas until sprays have dried.

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage and disposal.

Pesticide Storage: Reclose containers of unused XenTari. Store in a dry place inaccessible to children and out of sunlight.

Pesticide Disposal: Wastes resulting from the use of this product must be disposed of on site or at an approved waste disposal facility.

Container Handling: Nonrefillable container. Do not reuse or refill this container. Completely empty bag into application equipment, then offer for recycling if available or dispose of empty bag in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

USE INSTRUCTIONS

See Chemigation Section for Chemigation use directions.

Days to Harvest: There are no restrictions on applying XenTari up to the time of harvest. Individual state regulations may vary and should be consulted for allowable pre-harvest application intervals.

Sites: XenTari may be used for any labeled pest in both field and greenhouse use.

XenTari is an insecticide for use against listed caterpillars (larvae) of lepidopterous insects. Close scouting and early attention to infestations is highly recommended. Larvae must eat deposits of XenTari to be affected. Always follow these directions:

- Treat when larvae are young (early instars) before the crop is damaged.
- Larvae must be actively feeding on treated, exposed plant surfaces.
- Thorough spray coverage is needed to provide a uniform deposit of XenTari at the site of larval feeding. Use overhead and drop nozzles to obtain good spray coverage on both sides of foliage. Use sufficient spray volume to ensure uniform deposition on all plant surfaces.
- Under heavy pest population pressure, use the higher labeled application rates, shorten the spray interval, and/or raise spray volume to improve spray coverage.
- Repeat applications at an interval sufficient to maintain control, usually 3 to 14 days depending on plant growth rate, moth activity, rainfall after treating, and other factors. If attempting to control a pest with a single spray, make the treatment when egg hatch is essentially complete, but before crop damage occurs.
- A spreader-sticker, which has been approved for use on growing crops, should be added for hard-to-wet crops, such as cabbage, or to improve weather-fastness of the spray deposits.

XenTari may be tank mixed with other labeled insecticides to enhance control. Observe the most restrictive of the labeling limitations and precautions of all products used in mixtures. Do not mix XenTari with any product containing a label prohibition against such mixing. Do not exceed label dosage rates. Before tank mixing XenTari with other labeled products, including spreader stickers, check for tank mix compatibility.

After ingesting a lethal dose of XenTari, larvae stop feeding within the hour, and will die within several hours to 3 days. Mortality varies with larval size (instar), lepidopteran species, and dose consumed. Following ingestion, larvae become sluggish, discolor, then shrivel, blacken and die. Smaller larvae die more quickly.

XenTari may be applied in conventional ground or aerial equipment with quantities of water sufficient to provide uniform coverage of infested plant parts. The volume of water needed per acre will depend on crop development, relative humidity, spray equipment, and local experience. Usually, selection of moderate to high spray volume will provide the best results in most equipment. For ground use, apply a minimum of 10 gallons per acre. For air use, apply at least 2 gallons of water per acre, except in arid areas where 5 to 10 gallons of water are required. Begin the season with low water volume and increase as the plant canopy increases to ensure complete coverage. Add water to the mix tank and provide moderate agitation. With agitating, add the required amount of XenTari. Continue agitation, and add other spray materials, if any. Add remaining water, if any, and agitate until fully mixed. Maintain the suspension with moderate agitation while loading and spraying. Do not mix more XenTari than can be used in a 3-day period.

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment- and weather-related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all of these factors when making decisions.

For Smaller Spray Volumes:

<u>If Application Rate is</u>	<u>Use This Amount of XenTari Per Gallon of Water (wt)</u>	
1/4 lb XenTari/acre (crop) or 100 gal water	1/2 tsp.	(0.04 oz)
1/2 lb XenTari/acre (crop) or 100 gal water	1 tsp.	(0.08 oz)
1 lb XenTari/acre (crop) or 100 gal water	2 tsp.	(0.16 oz)
2 lb XenTari/acre (crop) or 100 gal water	4 tsp.	(0.32 oz)

CHEMIGATION USE DIRECTIONS

Apply this product only through sprinkler, including center pivot, lateral move, end tow, side (wheel) roll, traveler, big gun, solid set, or hand move, irrigation systems. Do not apply this product through any other type of irrigation system. Do not connect an irrigation system (including greenhouse systems) used for pesticide applications to a public water system.

Spray Preparation

First, prepare a suspension of XenTari in a mix tank. Fill tank with 1/2 to 3/4 the desired amount of water. Start mechanical or hydraulic agitation. Add the required amount of XenTari, and then the remaining volume of water. Then, set the sprinkler to deliver a minimum of 0.1 to 0.3 inch of water per acre. Start sprinkler and uniformly inject the suspension of XenTari into the irrigation water line so as to deliver the desired rate per acre. The suspension of XenTari should be injected with a positive displacement pump into the main line ahead of a right angle turn to ensure adequate mixing. Any questions on calibration should be directed to your State Extension Service Specialists, to equipment manufacturers or to other experts.

NOTE: When treatment with XenTari has been completed, further field irrigation over the treated area should be avoided for 24 to 48 hours to prevent washing the material off the crop.

Precautions for Applications Through Sprinkler Irrigation Systems

Maintain continuous agitation in the mix tank during the mixing and application to ensure a uniform suspension.

Greater accuracy in calibration and distribution will be achieved by injecting a larger volume for a more dilute solution per unit time.

Crop injury, lack of effectiveness, or illegal residues in the crop can result from non-uniform distribution of treated water. A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise. Allow sufficient time for pesticide to be flushed through all lines and all nozzles before turning off irrigation water.

The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow.

The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.

The pesticide injection pipeline must also contain a functional, normally closed, solenoid- operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation is either automatically or manually shut down.

The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.

The irrigation line or water pump must include a functional pressure switch, which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.

Systems must use a metering pump, such as a positive displacement injection pump (e.g. diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

Do not apply when wind speed favors drift beyond the area intended for treatment, when system connections or fittings leak, when nozzles do not provide uniform distribution or when lines containing the product must be dismantled and drained.

APPLICATION INSTRUCTIONS/RATES FOR XENTARI

(One 1 pound bag treats 0.5 acres at application rate of 2 lb/A to 4 acres at application rate of 1/4 lb/A)
 (One 5 pound bag treats 2.5 acres at application rate of 2 lb/A to 20 acres at application rate of 1/4 lb/A)

Crop or Crop Group	Pests	Pound/Acre
<p>Vegetable, root and tuber (Crop group 1) Including: Arracacha; arrowroot; artichoke, Chinese; artichoke, Jerusalem; beet, garden; beet, sugar; burdock, edible; canna, edible; carrot; cassava, bitter and sweet; celeriac; chayote (root); chervil, turnip-rooted; chicory; chufa; dasheen (taro); ginger; ginseng; horseradish; leren; parsley, turnip-rooted; parsnip; potato; radish; radish, oriental; rutabaga; salsify; salsify, black; salsify, Spanish; skirret; sweet potato; tanier; turmeric; turnip; yam bean; yam, true.</p>	<p>Loopers Omnivorous Leafroller* Hornworms* Imported Cabbageworm Diamondback Moth⁴ Green Cloverworm* Webworm Saltmarsh Caterpillar* Armyworms¹ Cutworms* Cross-striped Cabbageworm <i>Heliothis</i></p>	<p>1/4 - 1 1/2 1/4 - 2 1/4 - 1 1/2 1/4 - 1 1/2 1/4 - 2</p>
<p>Leaves of root and tuber vegetables (human food or animal feed) (Crop group 2) Including leaves of: Beet, garden; beet, sugar; burdock, edible; carrot; cassava, bitter and sweet; celeriac; chervil, turnip-rooted; chicory; dasheen (taro); parsnip; radish; radish, oriental; rutabaga; salsify, black; sweet potato; tanier; turnip; yam, true.</p>	<p>Loopers Omnivorous Leafroller* Hornworms* Imported Cabbageworm Diamondback Moth⁴ Green Cloverworm* Webworm Saltmarsh Caterpillar* Armyworms¹ Cutworms* Cross-striped Cabbageworm <i>Heliothis</i></p>	<p>1/4 - 1 1/2 1/4 - 2 1/4 - 1 1/2 1/4 - 1 1/2 1/4 - 2</p>

Crop or Crop Group	Pests	Pound/Acre
<p>Vegetable, bulb (Crop group 3-07) Including: Chive, fresh leaves; chive, Chinese, fresh leaves; daylily, bulb; elegans hosta; fritillaria, bulb; fritillaria, leaves; garlic, bulb; garlic, great-headed, bulb; garlic, serpent, bulb; kurrat; lady's leek; leek; leek, wild; lily, bulb; onion, Beltsville bunching; onion, bulb; onion, Chinese, bulb; onion, fresh; onion, green; onion, macrostem; onion, pearl; onion, potato, bulb; onion, tree, tops; onion, Welsh, tops; shallot, bulb; shallot, fresh leaves; cultivars, varieties, and/or hybrids of these.</p>	<p>Loopers Omnivorous Leafroller* Hornworms Imported Cabbageworm Diamondback Moth⁴ Green Cloverworm* Webworm Saltmarsh Caterpillar* Armyworms¹ Cutworms* Cross-striped Cabbageworm <i>Heliothis</i></p>	<p>1/4 - 1 1/2 1/4 - 2 1/2 - 1 1/2 1/4 - 1 1/2 1/4 - 2</p>
<p>Vegetable, leafy, except brassica (Crop group 4) Including: Amaranth (Chinese spinach); arugula (roquette); cardoon; celery; celery, Chinese; celtuce; chervil; chrysanthemum, edible-leaved; chrysanthemum, garland; corn salad; cress, garden; cress, upland; dandelion; dock (sorrel); endive (escarole); fennel, Florence; lettuce, head and leaf; orach; parsley; purslane, garden; purslane, winter; radicchio (red chicory); rhubarb; spinach, New Zealand; spinach, vine; Swiss chard.</p>	<p>Loopers Omnivorous Leafroller* Hornworms* Imported Cabbageworm Diamondback Moth⁴ Green Cloverworm* Webworm Saltmarsh Caterpillar* Armyworms¹ Cutworms* Cross-striped Cabbageworm <i>Heliothis</i></p>	<p>1/4 - 1 1/2 1/4 - 2 1/4 - 1 1/2 1/4 - 1 1/2 1/4 - 2</p>
<p>Vegetable, brassica (cole) leafy (Crop group 5) Including: Broccoli; broccoli, Chinese (gai lon); broccoli raab (rapini); Brussels sprouts; cabbage; cabbage, Chinese (bok choy); cabbage, Chinese (napa); cabbage, Chinese mustard (gai choy); cauliflower; cavalo broccolo; collards; kale; kohlrabi; mizuna; mustard greens; mustard spinach; rape greens.</p>	<p>Loopers Omnivorous Leafroller* Hornworms* Imported Cabbageworm Diamondback Moth⁴ Green Cloverworm* Webworm Saltmarsh Caterpillar* Armyworms¹ Cutworms* Cross-striped Cabbageworm <i>Heliothis</i></p>	<p>1/4 - 1 1/2 1/4 - 2 1/4 - 1 1/2 1/4 - 1 1/2 1/4 - 2</p>

Crop or Crop Group	Pests	Pound/Acre
<p>Legume vegetables (succulent or dried) (Crop group 6) Including: Bean (<i>Lupinus</i> spp.) (includes grain lupin, sweet lupin, white lupin, and white sweet lupin); bean (<i>Phaseolus</i> spp.) (includes field bean, kidney bean, lima bean, navy bean, pinto bean, runner bean, snap bean, tepary bean, wax bean); bean (<i>Vigna</i> spp.) (includes adzuki bean, asparagus bean, blackeyed pea, catjang, Chinese longbean, cowpea, Crowder pea, moth bean, mung bean, rice bean, southern pea, urd bean, yardlong bean); broad bean (fava); chickpea (garbanzo); guar; jackbean; lablab bean; lentil; Pea (<i>Pisum</i> spp.) (includes dwarf pea, edible-pod pea, English pea, field pea, garden pea, green pea, snow pea, sugar snap pea); pigeon pea; soybean; soybean (immature seed); sword bean.</p>	<p>Loopers Soybean Looper Green Cloverworm* Velvetbean Caterpillar* Armyworms¹ Podworms^{1*}</p>	<p>1/4 - 1 1/2 1/4 - 2 1/4 - 1 1/2 1/4 - 2 1/4 - 2 1/4 - 2</p>
<p>Foliage of legume vegetables (Crop group 7) Including foliage of: Any cultivar of bean (<i>Phaseolus</i> spp.) and field pea (<i>Pisum</i> spp.) and soybean (<i>Glycine max</i>).</p>	<p>Loopers Soybean Looper Green Cloverworm* Velvetbean Caterpillar* Armyworms¹ Podworms^{1*}</p>	<p>1/4 - 1 1/2 1/4 - 2 1/4 - 1 1/2 1/4 - 2 1/4 - 2 1/4 - 2</p>
<p>Vegetable, fruiting, except cucurbits (Crop group 8-10) Including: African eggplant; bush tomato; bell pepper; cocona; currant tomato; eggplant; garden huckleberry; goji berry; groundcherry; martynia; naranjilla; okra; pea eggplant; pepino; nonbell pepper; roselle; scarlet eggplant; sunberry; tomatillo; tomato; tree tomato; cultivars, varieties, and/or hybrids of these.</p>	<p>Loopers Hornworm Tomato Fruitworm Variegated Cutworm* Saltmarsh Caterpillar* Armyworms¹</p>	<p>1/4 - 1 1/2 1/4 - 2</p>

Crop or Crop Group	Pests	Pound/Acre
<p>Vegetable, cucurbit (Crop group 9) Including: Chayote (fruit); Chinese waxgourd (Chinese preserving melon); citron melon; cucumber; gherkin; gourd, edible (includes hyotan, cucuzza, hechima, Chinese okra); <i>Momordica</i> spp. (includes balsam apple, balsam pear, bitter melon, Chinese cucumber); muskmelon (includes cantaloupe); pumpkin; squash, summer; squash, winter (includes butternut squash, calabaza, hubbard squash, acorn squash, spaghetti squash); watermelon.</p>	<p>Loopers Melonworms* Rindworm complex* Armyworms¹ Cutworms</p>	<p>1/4 - 1 1/4 - 1 1/4 - 1 1/4 - 2 1/4 - 2</p>
<p>Fruit, citrus (Crop group 10-10) Including: Australian desert lime; Australian finger lime; Australian round lime; Brown River finger lime; calamondin; citron; citrus hybrids; grapefruit; Japanese summer grapefruit; kumquat; lemon; lime; Mediterranean mandarin; Mount White lime; New Guinea wild lime; orange, sour; orange, sweet; pummelo; Russell River lime; Satsuma mandarin; sweet lime; tachibana orange; Tahiti lime; tangelo; tangerine (mandarin); tangor; trifoliolate orange; uniq fruit; cultivars, varieties, and/or hybrids of these.</p>	<p>Armyworms¹ Fruittree Leafroller* Orangedog* Citrus Cutworm^{3*}</p>	<p>1/4 - 2 1/4 - 2 1/4 - 2 1/4 - 2</p>
<p>Fruit, pome (Crop group 11-10) Including: Apple; azarole; crabapple; loquat; mayhaw; medlar; pear; pear, Asian; quince; quince, Chinese; quince, Japanese; tejocote; cultivars, varieties, and/or hybrids of these.</p>	<p>Redhumped Caterpillar* Tent Caterpillars* Omnivorous Leafroller* Fall Webworm* Walnut Caterpillar* Cankerworms* Gypsy Moth* Variegated Leafroller* Redbanded Leafroller* Tufted Apple Budmoth* Fruittree Leafroller* Oriental Fruit Moth* Cutworms* Filbert Leafroller* Obliquebanded Leafroller* Codling Moth* Armyworms¹ Twig Borer*</p>	<p>1/4 - 2 1/4 - 2</p>

Crop or Crop Group	Pests	Pound/Acre
<p>Fruit, stone (Crop group 12) Including: Apricot; cherry, sweet; cherry, tart; nectarine; peach; plum; plum, Chickasaw; plum, Damson; plum, Japanese; plumcot; prune (fresh).</p>	<p>Redhumped Caterpillar* Tent Caterpillars* Omnivorous Leafroller* Fall Webworm* Walnut Caterpillar* Cankerworms* Gypsy Moth* Variegated Leafroller* Redbanded Leafroller* Tufted Apple Budmoth* Fruittree Leafroller* Oriental Fruit Moth* Cutworms* Filbert Leafroller* Obliquebanded Leafroller* Codling Moth* Armyworms¹ Twig Borer*</p>	<p>1/4 - 2 1/4 - 2</p>

Crop or Crop Group	Pests	Pound/Acre
<p>Berry and small fruit (Crop group 13-07) Including: Amur river grape; aronia berry; bayberry; bearberry; bilberry; blackberry (<i>Rubus</i> spp.) (includes Andean blackberry, arctic blackberry, bingleberry, black satin berry, boysenberry, brombeere, California blackberry, Chesterberry, Cherokee blackberry, Cheyenne blackberry, common blackberry, coryberry, darrowberry, dewberry, Dirksen thornless berry, evergreen blackberry, Himalayaberry, hullberry, lavacaberry, loganberry, lowberry, Lucretiaberry, mammoth blackberry, marionberry, mora, mures deronce, nectarberry, Northern dewberry; olallieberry, Oregon evergreen berry, phenomenalberry, rangeberry, ravenberry, rossberry, Shawnee blackberry, Southern dewberry, tayberry, youngberry, zarzamora, and cultivars, varieties and/or hybrids of these); blueberry, highbush; blueberry, lowbush; buffalo currant; buffaloberry; che; Chilean guava; chokecherry; cloudberry; cranberry*; cranberry, highbush; currant, black; currant, red; elderberry; European barberry, gooseberry; grape; honeysuckle, edible; huckleberry; jostaberry; Juneberry (Saskatoon berry); kiwifruit, fuzzy; kiwifruit, hardy; lingonberry; maypop; mountain pepper berries; mulberry; muntries; native currant; partridgeberry; phalsa; pincherry; raspberry, black and red; riberry; salal; schisandra berry; sea buckthorn; serviceberry; strawberry; wild raspberry; cultivars, varieties, and/or hybrids of these.</p> <p>(For cranberry - Spray only when there is no standing water in the bed)</p>	<p>Grapeleaf Skeletonizer Grape Leafroller* Achema Sphinx Moth* (Hornworm) Saltmarsh Caterpillar* Omnivorous Leafroller* Loopers Orange Tortrix* Obliquebanded Leafroller* Armyworms¹ Tobacco Budworm Grape Berry Moth Melonworms* Cutworm* Spanworm</p>	<p>1/4 - 1 1/2 1/4 - 2 1/4 - 2 1/4 - 2 1/4 - 1 1/2 1/4 - 1 1/2 1/4 - 1 1/2</p>

Crop or Crop Group	Pests	Pound/Acre
<p>Nut, tree (Crop group 14) Including: Almond; beech nut; Brazil nut; butternut; cashew; chestnut; chinquapin; filbert (hazelnut); hickory nut; macadamia nut; pecan; walnut, black and English.</p>	<p>Redhumped Caterpillar* Tent Caterpillars* Omnivorous Leafroller* Fall Webworm* Walnut Caterpillar* Cankerworms* Gypsy Moth* Variegated Leafroller* Redbanded Leafroller* Tufted Apple Budmoth* Fruittree Leafroller* Oriental Fruit Moth* Cutworms* Filbert Leafroller* Obliquebanded Leafroller* Codling Moth* Armyworms¹ Twig Borer*</p>	<p>1/4 - 2 1/4 - 2</p>
<p>Grain, cereal (Crop group 15) Including: Barley; buckwheat; corn; millet, pearl; millet, proso; oats; popcorn; rice; rye; sorghum (milo); teosinte; wheat; wild rice.</p> <p>(For rice - Spray only when there is no standing water in the bed)</p> <p>(For all cereal grain commodities - Use ground application only)</p>	<p><i>Heliothis</i>⁵ Armyworms¹ Headworms* European Corn Borer</p>	<p>1/2 - 2 1/4 - 2 1/4 - 2 1/4 - 2</p>
<p>Grass forage, fodder, and hay (Crop group 17) Including: Any grass, <i>Gramineae</i> family (either green or cured) except sugarcane and those included in the cereal grains group, that will be fed to or grazed by livestock, all pasture and range grasses and grasses grown for hay or silage.</p>	<p>Loopers Armyworms¹</p>	<p>1/4 - 2 1/4 - 2</p>
<p>Nongrass animal feeds (forage fodder straw and hay) (Crop group 18) Including: Alfalfa; bean, velvet; clover; kudzu; lespedeza; lupin; sainfoin; trefoil; vetch; vetch, crown; vetch, milk.</p>	<p>Loopers Alfalfa Caterpillar* European Skipper* (Essex Skipper) Armyworms¹</p>	<p>1/4 - 1 1/2 1/4 - 1 1/2 1/4 - 1 1/2 1/4 - 2</p>

Crop or Crop Group	Pests	Pound/Acre
<p>Herbs and spices (Crop group 19) and mint Including: Allspice; angelica; anise; anise, star; annatto (seed); balm; basil; borage; burnet; chamomile; caper buds; caraway; caraway, black; cardamom; cassia bark; cassia buds; catnip; celery seed; chervil (dried); chive; chive, Chinese; cinnamon; clary; clove buds; coriander leaf (cilantro or Chinese parsley); coriander seed (cilantro); costmary; culantro (leaf); culantro (seed); cumin; curry (leaf); dill (dillweed); dill (seed); fennel (common); fennel, Florence (seed); fenugreek; grains of paradise; horehound; hyssop; juniper berry; lavender; lemongrass; lovage (leaf); lovage (seed); mace; marigold; marjoram; mustard (seed); nasturtium; nutmeg; parsley (dried); pennyroyal; pepper, black; pepper, white; peppermint; poppy (seed); rosemary; rue; saffron; sage; savory, summer and winter; sweet bay; tansy; tarragon; thyme; vanilla; wintergreen; woodruff; wormwood.</p>	<p>Looper Saltmarsh Caterpillar* Armyworms¹</p>	<p>1/4 - 1 1/2 1/4 - 1 1/2 1/4 - 2</p>
<p>Oilseed (Crop Group 20) Including: Borage; calendula; castor oil plant; Chinese tallowtree; cottonseed; crambe; cuphea; echium; euphorbia; evening primrose; flax seed; gold of pleasure; hare's ear mustard; jojoba; lesquerella; lunaria; meadowfoam; milkweed; mustard seed; niger seed; oil radish; poppy seed; rapeseed (canola); rosehip; safflower; sesame; stokes aster; sunflower; sweet rocket; tallowwood; tea oil plant; vernonia; cultivars, varieties, and/or hybrids of these.</p> <p>(For sunflower - Use ground application only)</p>	<p>Looper Armyworms¹ <i>Heliothis</i> Tobacco Budworm^{2*} Cotton Bollworm^{2*} Saltmarsh Caterpillar* Head Moth*</p>	<p>1/4 - 2 1/4 - 2</p>
<p>Asparagus</p>	<p>Armyworms¹</p>	<p>1/4 - 2</p>

Crop or Crop Group	Pests	Pound/Acre
Avocado	Armyworms ¹ Amorbia Moth* Omnivorous Leafroller* Omnivorous Looper* Orange Tortrix* Spanworm*	1/4 - 2 1/4 - 2 1/4 - 2 1/4 - 2 1/4 - 2 1/4 - 2
Flowers, Bedding Plants and Ornamentals (Ground application only)	Loopers Tobacco Budworm Omnivorous Looper* Omnivorous Leafroller* Diamondback Moth ⁴ Armyworms ¹ Ello Moth* (Hornworm) Io Moth* Oleander Moth* Azalea Caterpillar*	1/4 - 1 1/2 1/4 - 2 1/4 - 1 1/2 1/4 - 1 1/2 1/4 - 1 1/2 1/4 - 1 1/2 1/4 - 1 1/2

Crop or Crop Group	Pests	Pound/Acre
Peanut	Armyworms ¹ Loopers Velvetbean Caterpillar* Green Cloverworm* Podworms ¹	1/4 - 2 1/4 - 1 1/2 1/4 - 1 1/2 1/4 - 1 1/2 1/4 - 1 1/2
Tobacco	Armyworms ¹ Tobacco Budworm Hornworms* Loopers	1/4 - 2 1/4 - 2 1/4 - 2 1/4 - 2
Turf	Armyworms ¹ Sod Webworm	1/4 - 2 1/2 - 2
Watercress (Spray only when there is no standing water in the bed)	Loopers Armyworms ¹ Diamondback Moth	1/2 - 2 1/2 - 2 1/2 - 1 1/2
GREENHOUSE/SHADEHOUSE AND OUTDOOR NURSERY		
Crops including, but not limited to: Vegetable, leafy, except brassica (Crop group 4); Vegetable, brassica (cole) leafy (Crop group 5); Vegetable, fruiting (Crop group 8); Herbs and spices (Crop group 19)	Loopers <i>Heliothis</i> Armyworms ¹	1/4 - 1 1/2 1/4 - 2 1/4 - 2

*For all states except California

¹XenTari may be used to control armyworms, loopers and/or podworms. For best results, apply full coverage sprays when 1st or 2nd instar larvae are present. Repeat treatment as necessary. Under rapidly increasing populations, use the highest labeled application rate, or tank mix with a contact insecticide. Against heterogeneous armyworm populations where 4th and 5th instar larvae are present, a contact insecticide in combination with XenTari should be used to enhance control.

²Use to control light to moderate populations of newly hatched worms in integrated pest management conditions. Repeat treatments at 4- to 5-day intervals as long as necessary and results are acceptable. Use in combination with ovicidal rates of labeled *Heliothis* ovicides.

³Apply to light to moderate populations of newly-hatched worms.

23/41

SUB LABEL 1

For use on all crops listed on the master label with changes in the initial application rates for commercial purposes.

**XENTARI®
BIOLOGICAL INSECTICIDE
DRY FLOWABLE**

 **For Organic Production**

Active Ingredient:

<i>Bacillus thuringiensis</i> subsp. <i>aizawai</i> strain ABTS-1857 fermentation solids, spores, and insecticidal toxins.....	54.0%*
Other Ingredients.....	46.0%
Total.....	100.0%

*Potency: 35,000 Diamondback Moth Units per mg of product or 15.9 billion Diamondback Moth Units per pound of product.

The percent active ingredient does not indicate product performance and potency measurements are not federally standardized.

**KEEP OUT OF REACH OF CHILDREN
CAUTION**

Manufactured for:
Valent BioSciences Corporation
870 Technology Way, Suite 100
Libertyville, IL 60048

Batch Code: _____

Net Weight: _____

EPA Registration No. 73049-40
EPA Est. No. 33762-IA-1

FIRST AID	
If in eyes	<ul style="list-style-type: none"> • Hold eye open, and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
If on skin or clothing	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.
If inhaled	<ul style="list-style-type: none"> • Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth if possible. • Call a poison control center or doctor for further treatment advice.
HOT LINE NUMBER	
<p>Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-877-315-9819 (24 hours) for emergency medical treatment and/or transportation emergency information. For all other information, call 1-800-323-9597.</p>	

**PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS (AND DOMESTIC ANIMALS)
CAUTION**

Causes moderate eye irritation. Harmful if absorbed through the skin or inhaled. Avoid contact with skin, eyes or clothing. Avoid breathing dust or spray mist. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove and wash contaminated clothing before reuse.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Waterproof gloves
- Shoes plus socks

Mixers/loaders and applicators must wear a dust/mist filtering respirator meeting NIOSH standards of at least N-95, R-95 or P-95. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.

Follow the manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

ENGINEERING CONTROLS

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

IMPORTANT: When reduced PPE is worn because a closed system is being used, handlers must be provided all PPE specified above for "applicators and other handlers" and have such PPE immediately available for use in an emergency, such as a spill or equipment breakdown.

<p>USER SAFETY RECOMMENDATIONS</p> <p>Users should:</p> <p>Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.</p> <p>Remove clothing/PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.</p>
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ENVIRONMENTAL HAZARDS

This product is toxic to aquatic invertebrates. For terrestrial uses: Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters or rinsate.

This product is toxic to the green lacewing and the predatory mite (*Metaseiulus occidentalis*).

This product must not be applied aerially within 1/4 mile of any habitats of threatened or endangered lepidoptera. No manual application can be made within 300 feet of any threatened or endangered lepidoptera.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. For any requirements specific to your State or Tribe, consult the State or Tribal agency responsible for pesticide regulation.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application.

Do not enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 4 hours.

PPE required for early entry to treated areas (that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water) is: coveralls, waterproof gloves and shoes plus socks.

NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

Keep unprotected persons out of treated areas until sprays have dried.

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage and disposal.

Pesticide Storage: Reclose containers of unused XenTari. Store in a dry place inaccessible to children and out of sunlight.

Pesticide Disposal: Wastes resulting from the use of this product must be disposed of on site or at an approved waste disposal facility.

Container Handling: Nonrefillable container. Do not reuse or refill this container. Completely empty bag into application equipment, then offer for recycling if available or dispose of empty bag in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

USE INSTRUCTIONS

See Chemigation Section for Chemigation use directions.

Days to Harvest: There are no restrictions on applying XenTari up to the time of harvest. Individual state regulations may vary and should be consulted for allowable pre-harvest application intervals.

Sites: XenTari may be used for any labeled pest in both field and greenhouse use.

XenTari is an insecticide for use against listed caterpillars (larvae) of lepidopterous insects. Close scouting and early attention to infestations is highly recommended. Larvae must eat deposits of XenTari to be affected. Always follow these directions:

- Treat when larvae are young (early instars) before the crop is damaged.
- Larvae must be actively feeding on treated, exposed plant surfaces.
- Thorough spray coverage is needed to provide a uniform deposit of XenTari at the site of larval feeding. Use overhead and drop nozzles to obtain good spray coverage on both sides of foliage. Use sufficient spray volume to ensure uniform deposition on all plant surfaces.
- Under heavy pest population pressure, use the higher labeled application rates, shorten the spray interval, and/or raise spray volume to improve spray coverage.
- Repeat applications at an interval sufficient to maintain control, usually 3 to 14 days depending on plant growth rate, moth activity, rainfall after treating, and other factors. If attempting to control a pest with a single spray, make the treatment when egg hatch is essentially complete, but before crop damage occurs.
- A spreader-sticker, which has been approved for use on growing crops, should be added for hard-to-wet crops, such as cabbage, or to improve weather-fastness of the spray deposits.

XenTari may be tank mixed with other labeled insecticides to enhance control. Observe the most restrictive of the labeling limitations and precautions of all products used in mixtures. Do not mix XenTari with any product containing a label prohibition against such mixing. Do not exceed label dosage rates. Before tank mixing XenTari with other labeled products, including spreader stickers, check for tank mix compatibility.

After ingesting a lethal dose of XenTari, larvae stop feeding within the hour, and will die within several hours to 3 days. Mortality varies with larval size (instar), lepidopteran species, and dose consumed. Following ingestion, larvae become sluggish, discolor, then shrivel, blacken and die. Smaller larvae die more quickly.

XenTari may be applied in conventional ground or aerial equipment with quantities of water sufficient to provide uniform coverage of infested plant parts. The volume of water needed per acre will depend on crop development, relative humidity, spray equipment, and local experience. Usually, selection of moderate to high spray volume will provide the best results in most equipment. For ground use, apply a minimum of 10 gallons per acre. For air use, apply at least 2 gallons of water per acre, except in arid areas, where 5 to 10 gallons of water are required. Begin the season with low water volume and increase as the plant canopy increases to ensure complete coverage. Add water to the mix tank and provide moderate agitation. With agitating, add the required amount of XenTari. Continue agitation, and add other spray materials, if any. Add remaining water, if any, and agitate until fully mixed. Maintain the suspension with moderate agitation while loading and spraying. Do not mix more XenTari than can be used in a 3-day period.

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment- and weather-related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all of these factors when making decisions.

For Smaller Spray Volumes:

<u>If Application Rate is</u>	<u>Use This Amount of XenTari Per Gallon of Water (wt)</u>	
1/4 lb XenTari/acre (crop) or 100 gal water	1/2 tsp.	(0.04 oz)
1/2 lb XenTari/acre (crop) or 100 gal water	1 tsp.	(0.08 oz)
1 lb XenTari/acre (crop) or 100 gal water	2 tsp.	(0.16 oz)
2 lb XenTari/acre (crop) or 100 gal water	4 tsp.	(0.32 oz)

CHEMIGATION USE DIRECTIONS

Apply this product only through sprinkler, including center pivot, lateral move, end tow, side (wheel) roll, traveler, big gun, solid set, or hand move, irrigation systems. Do not apply this product through any other type of irrigation system. Do not connect an irrigation system (including greenhouse systems) used for pesticide applications to a public water system.

Spray Preparation

First, prepare a suspension of XenTari in a mix tank. Fill tank with 1/2 to 3/4 the desired amount of water.

Start mechanical or hydraulic agitation. Add the required amount of XenTari, and then the remaining volume of water. Then, set the sprinkler to deliver a minimum of 0.1 to 0.3 inch of water per acre. Start sprinkler and uniformly inject the suspension of XenTari into the irrigation water line so as to deliver the desired rate per acre. The suspension of XenTari should be injected with a positive displacement pump into the main line ahead of a right angle turn to ensure adequate mixing. Any questions on calibration should be directed to your State Extension Service Specialists, to equipment manufacturers or to other experts.

NOTE: When treatment with XenTari has been completed, further field irrigation over the treated area should be avoided for 24 to 48 hours to prevent washing the material off the crop.

Precautions for Applications Through Sprinkler Irrigation Systems

Maintain continuous agitation in the mix tank during the mixing and application to ensure a uniform suspension.

Greater accuracy in calibration and distribution will be achieved by injecting a larger volume for a more dilute solution per unit time.

Crop injury, lack of effectiveness, or illegal residues in the crop can result from non-uniform distribution of treated water. A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise. Allow sufficient time for pesticide to be flushed through all lines and all nozzles before turning off irrigation water.

The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow.

The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.

The pesticide injection pipeline must also contain a functional, normally closed, solenoid- operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation is either automatically or manually shut down.

The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.

The irrigation line or water pump must include a functional pressure switch, which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.

Systems must use a metering pump, such as a positive displacement injection pump (e.g. diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

Do not apply when wind speed favors drift beyond the area intended for treatment, when system connections or fittings leak, when nozzles do not provide uniform distribution or when lines containing the

product must be dismantled and drained.

APPLICATION INSTRUCTIONS/RATES FOR XENTARI

(One 1 pound bag treats 0.5 acres at application rate of 2 lb/A to 2 acres at application rate of 1/2 lb/A)

(One 5 pound bag treats 2.5 acres at application rate of 2 lb/A to 10 acres at application rate of 1/2 lb/A)

Crop or Crop Group	Pests	Pound/Acre
<p>Vegetable, root and tuber (Crop group 1) Including: Arracacha; arrowroot; artichoke, Chinese; artichoke, Jerusalem; beet, garden; beet, sugar; burdock, edible; canna, edible; carrot; cassava, bitter and sweet; celeriac; chayote (root); chervil, turnip-rooted; chicory; chufa; dasheen (taro); ginger; ginseng; horseradish; leren; parsley, turnip-rooted; parsnip; potato; radish; radish, oriental; rutabaga; salsify; salsify, black; salsify, Spanish; skirret; sweet potato; tanier; turmeric; turnip; yam bean; yam, true.</p>	<p>Loopers Omnivorous Leafroller* Hornworms* Imported Cabbageworm Diamondback Moth⁴ Green Cloverworm* Webworm Saltmarsh Caterpillar* Armyworms¹ Cutworms* Cross-striped Cabbageworm <i>Heliothis</i></p>	<p>1/2 - 1 1/2 1/2 - 2 1/2 - 1 1/2 1/2 - 1 1/2 1/2 - 2</p>
<p>Leaves of root and tuber vegetables (human food or animal feed) (Crop group 2) Including leaves of: Beet, garden; beet, sugar; burdock, edible; carrot; cassava, bitter and sweet; celeriac; chervil, turnip-rooted; chicory; dasheen (taro); parsnip; radish; radish, oriental; rutabaga; salsify, black; sweet potato; tanier; turnip; yam, true.</p>	<p>Loopers Omnivorous Leafroller* Hornworms* Imported Cabbageworm Diamondback Moth⁴ Green Cloverworm* Webworm Saltmarsh Caterpillar* Armyworms¹ Cutworms* Cross-striped Cabbageworm <i>Heliothis</i></p>	<p>1/2 - 1 1/2 1/2 - 2 1/2 - 1 1/2 1/2 - 1 1/2 1/2 - 2</p>

Crop or Crop Group	Pests	Pound/Acre
<p>Vegetable, bulb (Crop group 3-07) Including: Chive, fresh leaves; chive, Chinese, fresh leaves; daylily, bulb; elegans hosta; fritillaria, bulb; fritillaria, leaves; garlic, bulb; garlic, great-headed, bulb; garlic, serpent, bulb; kurrat; lady's leek; leek; leek, wild; lily, bulb; onion, Beltsville bunching; onion, bulb; onion, Chinese, bulb; onion, fresh; onion, green; onion, macrostem; onion, pearl; onion, potato, bulb; onion, tree, tops; onion, Welsh, tops; shallot, bulb; shallot, fresh leaves; cultivars, varieties, and/or hybrids of these.</p>	<p>Loopers Omnivorous Leafroller* Hornworms Imported Cabbageworm Diamondback Moth⁴ Green Cloverworm* Webworm Saltmarsh Caterpillar* Armyworms¹ Cutworms* Cross-striped Cabbageworm <i>Heliothis</i></p>	<p>1/2 - 1 1/2 1/2 - 2 1/2 - 1 1/2 1/2 - 1 1/2 1/2 - 2</p>
<p>Vegetable, leafy, except brassica (Crop group 4) Including: Amaranth (Chinese spinach); arugula (roquette); cardoon; celery; celery, Chinese; celtuce; chervil; chrysanthemum, edible-leaved; chrysanthemum, garland; corn salad; cress, garden; cress, upland; dandelion; dock (sorrel); endive (escarole); fennel, Florence; lettuce, head and leaf; orach; parsley; purslane, garden; purslane, winter; radicchio (red chicory); rhubarb; spinach, New Zealand; spinach, vine; Swiss chard.</p>	<p>Loopers Omnivorous Leafroller* Hornworms* Imported Cabbageworm Diamondback Moth⁴ Green Cloverworm* Webworm Saltmarsh Caterpillar* Armyworms¹ Cutworms* Cross-striped Cabbageworm <i>Heliothis</i></p>	<p>1/2 - 1 1/2 1/2 - 2 1/2 - 1 1/2 1/2 - 1 1/2 1/2 - 2</p>
<p>Vegetable, brassica (cole) leafy (Crop group 5) Including: Broccoli; broccoli, Chinese (gai lon); broccoli raab (rapini); Brussels sprouts; cabbage; cabbage, Chinese (bok choy); cabbage, Chinese (napa); cabbage, Chinese mustard (gai choy); cauliflower; cavalo broccolo; collards; kale; kohlrabi; mizuna; mustard greens; mustard spinach; rape greens.</p>	<p>Loopers Omnivorous Leafroller* Hornworms* Imported Cabbageworm Diamondback Moth⁴ Green Cloverworm* Webworm Saltmarsh Caterpillar* Armyworms¹ Cutworms* Cross-striped Cabbageworm <i>Heliothis</i></p>	<p>1/2 - 1 1/2 1/2 - 2 1/2 - 1 1/2 1/2 - 1 1/2 1/2 - 2</p>

Crop or Crop Group	Pests	Pound/Acre
<p>Legume vegetables (succulent or dried) (Crop group 6) Including: Bean (<i>Lupinus</i> spp.) (includes grain lupin, sweet lupin, white lupin, and white sweet lupin); bean (<i>Phaseolus</i> spp.) (includes field bean, kidney bean, lima bean, navy bean, pinto bean, runner bean, snap bean, tepary bean, wax bean); bean (<i>Vigna</i> spp.) (includes adzuki bean, asparagus bean, blackeyed pea, catjang, Chinese longbean, cowpea, Crowder pea, moth bean, mung bean, rice bean, southern pea, urd bean, yardlong bean); broad bean (fava); chickpea (garbanzo); guar; jackbean; lablab bean; lentil; Pea (<i>Pisum</i> spp.) (includes dwarf pea, edible-pod pea, English pea, field pea, garden pea, green pea, snow pea, sugar snap pea); pigeon pea; soybean; soybean (immature seed); sword bean.</p>	<p>Loopers Soybean Looper Green Cloverworm* Velvetbean Caterpillar* Armyworms¹ Podworms^{1*}</p>	<p>1/2 - 1 1/2 1/2 - 2 1/2 - 1 1/2 1/2 - 2 1/2 - 2 1/2 - 2</p>
<p>Foliage of legume vegetables (Crop group 7) Including foliage of: Any cultivar of bean (<i>Phaseolus</i> spp.) and field pea (<i>Pisum</i> spp.) and soybean (<i>Glycine max</i>).</p>	<p>Loopers Soybean Looper Green Cloverworm* Velvetbean Caterpillar* Armyworms¹ Podworms^{1*}</p>	<p>1/2 - 1 1/2 1/2 - 2 1/2 - 1 1/2 1/2 - 2 1/2 - 2 1/2 - 2</p>
<p>Vegetable, fruiting, except cucurbits (Crop group 8-10) Including: African eggplant; bush tomato; bell pepper; cocona; currant tomato; eggplant; garden huckleberry; goji berry; groundcherry; martynia; naranjilla; okra; pea eggplant; pepino; nonbell pepper; roselle; scarlet eggplant; sunberry; tomatillo; tomato; tree tomato; cultivars, varieties, and/or hybrids of these.</p>	<p>Loopers Hornworm Tomato Fruitworm Variegated Cutworm* Saltmarsh Caterpillar* Armyworms¹</p>	<p>1/2 - 1 1/2 1/2 - 2</p>

Crop or Crop Group	Pests	Pound/Acre
<p>Vegetable, cucurbit (Crop group 9) Including: Chayote (fruit); Chinese waxgourd (Chinese preserving melon); citron melon; cucumber; gherkin; gourd, edible (includes hyotan, cucuzza, hechima, Chinese okra); <i>Momordica</i> spp. (includes balsam apple, balsam pear, bitter melon, Chinese cucumber); muskmelon (includes cantaloupe); pumpkin; squash, summer; squash, winter (includes butternut squash, calabaza, hubbard squash, acorn squash, spaghetti squash); watermelon.</p>	<p>Loopers Melonworms* Rindworm complex* Armyworms¹ Cutworms</p>	<p>1/2 - 1 1/2 - 1 1/2 - 1 1/2 - 2 1/2 - 2</p>
<p>Fruit, citrus (Crop group 10-10) Including: Australian desert lime; Australian finger lime; Australian round lime; Brown River finger lime; calamondin; citron; citrus hybrids; grapefruit; Japanese summer grapefruit; kumquat; lemon; lime; Mediterranean mandarin; Mount White lime; New Guinea wild lime; orange, sour; orange, sweet; pummelo; Russell River lime; Satsuma mandarin; sweet lime; tachibana orange; Tahiti lime; tangelo; tangerine (mandarin); tangor; trifoliate orange; uniq fruit; cultivars, varieties, and/or hybrids of these.</p>	<p>Armyworms¹ Fruittree Leafroller* Orangedog* Citrus Cutworm^{3*}</p>	<p>1/2 - 2 1/2 - 2 1/2 - 2 1/2 - 2</p>
<p>Fruit, pome (Crop group 11-10) Including: Apple; azarole; crabapple; loquat; mayhaw; medlar; pear; pear, Asian; quince; quince, Chinese; quince, Japanese; tejocote; cultivars, varieties, and/or hybrids of these.</p>	<p>Redhumped Caterpillar* Tent Caterpillars* Omnivorous Leafroller* Fall Webworm* Walnut Caterpillar* Cankerworms* Gypsy Moth* Variegated Leafroller* Redbanded Leafroller* Tufted Apple Budmoth* Fruittree Leafroller* Oriental Fruit Moth* Cutworms* Filbert Leafroller* Obliquebanded Leafroller* Codling Moth* Armyworms¹ Twig Borer*</p>	<p>1/2 - 2 1/2 - 2</p>

Crop or Crop Group	Pests	Pound/Acre
Fruit, stone (Crop group 12) Including: Apricot; cherry, sweet; cherry, tart; nectarine; peach; plum; plum, Chickasaw; plum, Damson; plum, Japanese; plumcot; prune (fresh).	Redhumped Caterpillar* Tent Caterpillars* Omnivorous Leafroller* Fall Webworm* Walnut Caterpillar* Cankerworms* Gypsy Moth* Variegated Leafroller* Redbanded Leafroller* Tufted Apple Budmoth* Fruittree Leafroller* Oriental Fruit Moth* Cutworms* Filbert Leafroller* Obliquebanded Leafroller* Codling Moth* Armyworms ¹ Twig Borer*	1/2 - 2 1/2 - 2

Crop or Crop Group	Pests	Pound/Acre
<p>Berry and small fruit (Crop group 13-07) Including: Amur river grape; aronia berry; bayberry; bearberry; bilberry; blackberry (<i>Rubus</i> spp.) (includes Andean blackberry, arctic blackberry, bingleberry, black satin berry, boysenberry, brombeere, California blackberry, Chesterberry, Cherokee blackberry, Cheyenne blackberry, common blackberry, coryberry, darrowberry, dewberry, Dirksen thornless berry, evergreen blackberry, Himalayaberry, hullberry, lavacaberry, loganberry, lowberry, Lucretiaberry, mammoth blackberry, marionberry, mora, mures deronce, nectarberry, Northern dewberry; olallieberry, Oregon evergreen berry, phenomenalberry, rangeberry, ravenberry, rossberry, Shawnee blackberry, Southern dewberry, tayberry, youngberry, zarzamora, and cultivars, varieties and/or hybrids of these); blueberry, highbush; blueberry, lowbush; buffalo currant; buffaloberry; che; Chilean guava; chokecherry; cloudberry; cranberry*; cranberry, highbush; currant, black; currant, red; elderberry; European barberry, gooseberry; grape; honeysuckle, edible; huckleberry; jostaberry; Juneberry (Saskatoon berry); kiwifruit, fuzzy; kiwifruit, hardy; lingonberry; maypop; mountain pepper berries; mulberry; muntries; native currant; partridgeberry; phalsa; pincherry; raspberry, black and red; riberry; salal; schisandra berry; sea buckthorn; serviceberry; strawberry; wild raspberry; cultivars, varieties, and/or hybrids of these.</p> <p>(For cranberry - Spray only when there is no standing water in the bed)</p>	<p>Grapeleaf Skeletonizer Grape Leafroller* Achema Sphinx Moth* (Hornworm) Saltmarsh Caterpillar* Omnivorous Leafroller* Loopers Orange Tortrix* Obliquebanded Leafroller* Armyworms¹ Tobacco Budworm Grape Berry Moth Melonworms* Cutworm* Spanworm</p>	<p>1/2 - 1 1/2 1/2 - 2 1/2 - 2 1/2 - 2 1/2 - 1 1/2 1/2 - 1 1/2 1/2 - 1 1/2 1/2 - 1 1/2</p>

Crop or Crop Group	Pests	Pound/Acre
<p>Nut, tree (Crop group 14) Including: Almond; beech nut; Brazil nut; butternut; cashew; chestnut; chinquapin; filbert (hazelnut); hickory nut; macadamia nut; pecan; walnut, black and English.</p>	<p>Redhumped Caterpillar* Tent Caterpillars* Omnivorous Leafroller* Fall Webworm* Walnut Caterpillar* Cankerworms* Gypsy Moth* Variegated Leafroller* Redbanded Leafroller* Tufted Apple Budmoth* Fruittree Leafroller* Oriental Fruit Moth* Cutworms* Filbert Leafroller* Obliquebanded Leafroller* Codling Moth* Armyworms¹ Twig Borer*</p>	<p>1/2 - 2 1/2 - 2</p>
<p>Grain, cereal (Crop group 15) Including: Barley; buckwheat; corn; millet, pearl; millet, proso; oats; popcorn; rice; rye; sorghum (milo); teosinte; wheat; wild rice.</p> <p>(For rice - Spray only when there is no standing water in the bed)</p> <p>(For all cereal grain commodities - Use ground application only)</p>	<p><i>Heliothis</i>⁵ Armyworms¹ Headworms* European Corn Borer</p>	<p>1/2 - 2 1/2 - 2 1/2 - 2 1/2 - 2</p>
<p>Grass forage, fodder, and hay (Crop group 17) Including: Any grass, <i>Gramineae</i> family (either green or cured) except sugarcane and those included in the cereal grains group, that will be fed to or grazed by livestock, all pasture and range grasses and grasses grown for hay or silage.</p>	<p>Loopers Armyworms¹</p>	<p>1/2 - 2 1/2 - 2</p>
<p>Nongrass animal feeds (forage fodder straw and hay) (Crop group 18) Including: Alfalfa; bean, velvet; clover; kudzu; lespedeza; lupin; sainfoin; trefoil; vetch; vetch, crown; vetch, milk.</p>	<p>Loopers Alfalfa Caterpillar* European Skipper* (Essex Skipper) Armyworms¹</p>	<p>1/2 - 1 1/2 1/2 - 1 1/2 1/2 - 1 1/2 1/2 - 2</p>

Crop or Crop Group	Pests	Pound/Acre
<p>Herbs and spices (Crop group 19) and mint Including: Allspice; angelica; anise; anise, star; annatto (seed); balm; basil; borage; burnet; chamomile; caper buds; caraway; caraway, black; cardamom; cassia bark; cassia buds; catnip; celery seed; chervil (dried); chive; chive, Chinese; cinnamon; clary; clove buds; coriander leaf (cilantro or Chinese parsley); coriander seed (cilantro); costmary; culantro (leaf); culantro (seed); cumin; curry (leaf); dill (dillweed); dill (seed); fennel (common); fennel, Florence (seed); fenugreek; grains of paradise; horehound; hyssop; juniper berry; lavender; lemongrass; lovage (leaf); lovage (seed); mace; marigold; marjoram; mustard (seed); nasturtium; nutmeg; parsley (dried); pennyroyal; pepper, black; pepper, white; peppermint; poppy (seed); rosemary; rue; saffron; sage; savory, summer and winter; sweet bay; tansy; tarragon; thyme; vanilla; wintergreen; woodruff; wormwood.</p>	<p>Looper Saltmarsh Caterpillar* Armyworms¹</p>	<p>1/2 - 1 1/2 1/2 - 1 1/2 1/2 - 2</p>
<p>Oilseed (Crop Group 20) Including: Borage; calendula; castor oil plant; Chinese tallowtree; cottonseed; crambe; cuphea; echium; euphorbia; evening primrose; flax seed; gold of pleasure; hare's ear mustard; jojoba; lesquerella; lunaria; meadowfoam; milkweed; mustard seed; niger seed; oil radish; poppy seed; rapeseed (canola); rosehip; safflower; sesame; stokes aster; sunflower; sweet rocket; tallowwood; tea oil plant; vernonia; cultivars, varieties, and/or hybrids of these.</p> <p>(For sunflower - Use ground application only)</p>	<p>Looper Armyworms¹ <i>Heliothis</i> Tobacco Budworm^{2*} Cotton Bollworm^{2*} Saltmarsh Caterpillar* Head Moth*</p>	<p>1/2 - 2 1/2 - 2 1/2 - 2 1/2 - 2 1/2 - 2 1/2 - 2 1/2 - 2</p>
<p>Asparagus</p>	<p>Armyworms¹</p>	<p>1/2 - 2</p>
<p>Avocado</p>	<p>Armyworms¹ Amorbia Moth* Omnivorous Leafroller* Omnivorous Looper* Orange Tortrix* Spanworm*</p>	<p>1/2 - 2 1/2 - 2 1/2 - 2 1/2 - 2 1/2 - 2 1/2 - 2</p>

Crop or Crop Group	Pests	Pound/Acre
<p>Flowers, Bedding Plants and Ornamentals</p> <p>(Ground application only)</p>	<p>Loopers Tobacco Budworm Omnivorous Looper* Omnivorous Leafroller* Diamondback Moth⁴ Armyworms¹ Ello Moth* (Hornworm) Io Moth* Oleander Moth* Azalea Caterpillar*</p>	<p>1/2 - 1 1/2 1/2 - 2 1/2 - 1 1/2 1/2 - 1 1/2 1/2 - 1 1/2 1/2 - 1 1/2</p>
<p>Fruit, tropical (grown in U.S.A.) Including: Anonna; avocado; banana/plantain; caimito; carambola (star fruit); guava; longan; sapodilla; papaya; passion fruit; mango; lychee; jakfruit; dragon fruit; mamey sapote; coconut cherimoya; canistel; monstera; wax jambu; pomegranate; rambutan; pulasan; Pakistani mulberry; langsai; chempedak; durian; fig pineapple; jaboticaba; mountain apples.</p>	<p>Armyworms¹ Hornworm* Leafrollers* Omnivorous Looper* Loopers Banana Skipper* Omnivorous Leafroller* <i>Batrachedra comosae</i> (Hodges) Thecla Moth Redhumped Caterpillar* Tent Caterpillars* Fall Webworm* Walnut Caterpillar* Cankerworms* Gypsy Moth* Variegated Leafroller* Redbanded Leafroller* Tufted Apple Budmoth* Fruittree Leafroller* Oriental Fruit Moth* Cutworms* Filbert Leafroller* Obliquebanded Leafroller* Codling Moth* Twig Borer*</p>	<p>1/2 - 2 1/2 - 2 1/2 - 2 1/2 - 2 1/2 - 2 1/2 - 1 1/2 1/2 - 2 1/2 - 1 1/2 1/2 - 1 1/2 1/2 - 2 1/2 - 2</p>
<p>Globe artichoke</p>	<p>Artichoke Plume Moth Cutworms* Thistle Butterfly</p>	<p>1/2 - 1 1/2 1/2 - 1 1/2 1/2 - 1 1/2</p>

Crop or Crop Group	Pests	Pound/Acre
Hops	Loopers Armyworms ¹	1/2 - 2 1/2 - 2
Malanga	Saltmarsh Caterpillar* Armyworms ¹	1/2 - 2 1/2 - 2
Peanut	Armyworms ¹ Loopers Velvetbean Caterpillar* Green Cloverworm* Podworms ¹	1/2 - 2 1/2 - 1 1/2 1/2 - 1 1/2 1/2 - 1 1/2 1/2 - 1 1/2
Tobacco	Armyworms ¹ Tobacco Budworm Hornworms* Loopers	1/2 - 2 1/2 - 2 1/2 - 2 1/2 - 2
Turf	Armyworms ¹ Sod Webworm	1/2 - 2 1/2 - 2
Watercress (Spray only when there is no standing water in the bed)	Loopers Armyworms ¹ Diamondback Moth	1/2 - 2 1/2 - 2 1/2 - 1 1/2
GREENHOUSE/SHADEHOUSE AND OUTDOOR NURSERY		
Crops including, but not limited to: Vegetable, leafy, except brassica (Crop group 4); Vegetable, brassica (cole) leafy (Crop group 5); Vegetable, fruiting (Crop group 8); Herbs and spices (Crop group 19)	Loopers <i>Heliothis</i> Armyworms ¹	1/2 - 1 1/2 1/2 - 2 1/2 - 2

*For all states except California

¹XenTari may be used to control armyworms and/or podworms. For best results, apply full coverage sprays when 1st or 2nd instar larvae are present. Repeat treatment as necessary. Under rapidly increasing populations, use the highest labeled application rate, or tank mix with a contact insecticide. Against heterogeneous armyworm populations where 4th and 5th instar larvae are present, a contact insecticide in combination with XenTari should be used to enhance control.

To the extent consistent with applicable law, seller makes no warranty, express or implied, of merchantability, fitness or otherwise concerning the use of this product other than as indicated on the label. User assumes all risks of use, storage or handling not in accordance with accompanying directions.

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